

**REMARKS**

Applicant thanks the Examiner for the thorough consideration given the present application. Claims 1-26 are currently being prosecuted in this application. Claims 20, 21 and 25 have been amended to correct minor typographical errors. The claims have been amended to add additional limitations and in particular that the result of the current controller is that the width of the current path from the data line to the liquid crystal cell is changed. Support for this is found on page 7, lines 11-14 and 19-25. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

***Entry of Amendment***

It is respectfully requested that the present amendment should be entered into the official file in view of the fact that the amendments to the claims automatically place the application into condition for allowance. Alternatively, it is respectfully requested that the present amendment should be entered for the purposes of appeal. The present amendments help to describe the invention further and accordingly, their entry is considered appropriate.

***Rejection Under 35 U.S.C. § 103***

Claims 1-3, 6, 8-10, 15-19, 22, 23, 25 and 26 stand rejected under 35 U.S.C. § 103 as being obvious over Katakura et al. (USP 5,754,154) in view of Kikuo et al. (USP 5,250,937). This rejection is respectfully traversed.

The Examiner states that Katakura et al. teaches a charge characteristic compensating circuit for a liquid crystal display panel including a plurality of liquid crystal cells arranged at each intersection between data lines and gate lines to control light transmissivity in response to data signals from the data lines and a plurality of switching devices for switching the data signals to be applied from the data lines to the liquid crystal cells in response to signals on the gate lines. The Examiner further states that the circuit includes a voltage supply for generating a gate voltage required for the gate lines, a gate line driver for applying the gate voltage from the voltage supply to the gate lines to drive the gate lines and a current controller for responding to a change in ambient temperature to change an amount of current of the gate voltage to be applied from the voltage supply to the gate line driver. The Examiner admits that the reference fails to teach scan lines connected to the gate lines to

drive an LCD display and a resistor and a thermistor for responding to change in ambient temperature.

The Examiner relies on the Kikuo et al. reference to teach that gate lines and gate line drivers are connected to the scan lines and scan line driver. The Examiner also relies on this reference to teach the use of a resistor and thermistor to correct for ambient temperature changes.

Applicant disagrees with the Examiner's understanding of the Katakura et al. reference. Admittedly, this reference shows a liquid crystal display panel which responds to temperature changes. In particular, this reference is concerned with variations in transmissivity of the cells due to an uneven temperature distribution. The system applies a detection signal to the scan electrodes, as shown in Figures 3 and 4 in order to measure the current through various pixels. Thus, detection signal application circuit 106 applies a voltage shown in Figure 4A to the scan electrode and the resultant current detected by data electrode 202 is measured in current detection circuit 107. The detected current is shown in Figure 4B. As seen in Figure 5, a control circuit 116 will then respond to the detected current to switch connections of the scan lines in changeover circuit 102. This arrangement is then incorporated into the system of Figure 8 where a temperature sensor

109 is applied to the current detection circuit 108 through the temperature detection circuit 110. This provides information to the detection waveform application circuit that a voltage signal such as seen in Figure 4A should be applied. This is measured in current detection circuit 107 and the information obtained is applied to the display signal control circuit 105 through the current detection control circuit 108. This control circuit provides changeover data to circuits 102 in both directions. Thus, these various parts do provide a temperature detection and compensation arrangement but only through measuring the current carried by the pixels and then controlling the switches based on this changeover data. The actual scan signals are still applied through scan signal application circuit 103 and the data signals are applied through data signal application circuit 104.

Claim 1 describes the charge characteristic compensation circuit as including a voltage supply for generating a gate voltage, a gate line driver for applying the gate voltage to the gate lines and a current controller connected between the two and including a resistor and a thermistor to change the current of the gate voltage. The claim also describes the result as changing a width of a current path from the data line to liquid crystal cell. Even if the reference teaches a gate voltage applied through

circuit 103 to the panel, the reference does not teach that the width of the current path is changed. Accordingly, even if the reference teaches some type of response to the ambient temperature, it does not result in the change of the current path from the data line to the liquid crystal cell.

The Examiner points out that the Kikuo et al. reference teaches the concept of a resistor and thermistor connected to respond to a change in ambient temperature. However, even if this is true, it does not teach a current controller having these two elements to change the current of the gate voltage. It also does not teach that the width of the current data is changed. Thus, neither of the references teach these features. Even if one attempted to combine the teachings of Katakura et al., there is no indication of how the width of the current path would be changed as presently claimed. Thus, Applicant submits that even if these two references are combined, they still do not teach the invention as presently claimed. Accordingly, Applicant submits that claim 1 is allowable over this combination of references.

Claim 6 is another independent claim containing a similar recitation of the voltage supply, gate line driver and current controller. Accordingly, claim 6 is allowable for the same reasons recited above in regard to claim 1.

Claim 9 describes a charge characteristic compensating circuit including a voltage converter for generating a high level gate voltage, a gate line controller including a resistor and thermistor receiving this gate voltage from the voltage converter and supplying a controlling signal and a gate line driver receiving the controlling signal. Applicant submits that claim 9 is likewise allowable for the same reasons recited above in regard to claim 1. That is, the combination of the references does not show a resistor and thermistor as part of a gate line controller receiving an input from the voltage converter and supplying a signal which varies as the ambient temperature to the gate line driver. Accordingly, claim 9 is similarly allowable since the references do not show supplying the predetermined voltage to a gate line according to the controlling signal to drive the gate line. Accordingly, Applicant submits that claim 9 is likewise allowable.

Claim 22 describes a method for compensating for a charge characteristic including generating a gate voltage, supplying a controlling signal that varies by way of a resistor and thermistor as the ambient temperature and supplying a predetermined voltage to a gate line according to the controlling signal. Applicant submits that the combination of references similarly does not show that the features of this claim since it does not show the step of supplying

a controlling signal from the gate voltage that varies as the ambient temperature and including a resistor and thermistor. Accordingly, Applicant submits that claim 22 is likewise allowable.

Claims 2-5, 7, 8, 10-21 and 23-26 depend from these allowable claims and are likewise considered to be allowable. These claims recite additional features which make them additionally allowable including details of the connection of the resistor and thermistor, the type of temperature coefficient and the use of a voltage divider. Accordingly, these claims are considered to be additionally allowable.

Claims 4, 5, 7, 11-13 and 24 stand rejected as being obvious over Katakura et al. in view of Kikuo et al. and further in view of Marks et al. (USP 5,119,215). Claims 20 and 21 stand rejected under 35 U.S.C. § 103 as being obvious over Katakura et al. in view of Kikuo et al. and further in view of Noma et al. (USP 6,184,631). These rejections are respectfully traversed.

The Examiner cited the Marks et al. reference to teach a thermistor with a positive temperature coefficient. The Examiner cited the Noma et al. reference to teach the use of a voltage divider. Applicant submits that even if these references do teach the features noted by the Examiner, Applicant submits that the three-way combination of references still do not overcome the

deficiencies noted above in regard to the obviousness rejection. Accordingly, Applicant submits that these claims are likewise allowable.

### Conclusion

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied upon by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicant respectfully petitions for a one (1) month extension of time for filing a response in connection with the present application and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any



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overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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